

5

## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 05-224846  
 (43)Date of publication of application : 03.09.1993

(51)Int.Cl. G06F 3/12  
 B41J 5/30  
 B41J 29/38  
 G06F 15/62

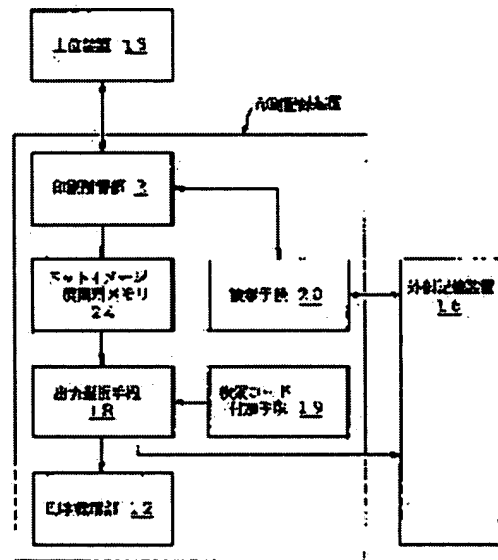
(21)Application number : 04-027586 (71)Applicant : FUJITSU LTD  
 (22)Date of filing : 14.02.1992 (72)Inventor : YOSHIDA SHINICHI  
 YAMAKAWA SHIGERU  
 SHIKI YOZO  
 NAKAMARU AKIHIKO

## (54) PRINTING AND RECORDING DEVICE

## (57)Abstract:

PURPOSE: To effectively utilize image data developed so as to be visually observed in the case of printing and recording concerning, the printing and recording device to store printing data developed to dot images in a disk device or the like so as to be used again.

CONSTITUTION: The image data developed from printing information to dot images can be outputted while selecting either the output of a printing mechanism part 12 or that of an external storage device 16 such as the disk device and in the case of writing the data while selecting the output of the external storage device 16, retrieval code data are added. After recording, the image data stored in the external storage device 16 are retrieved based on a retrieving instruction, and they are read out or printed/recorded or transferred to a host device 15.



## LEGAL STATUS

[Date of request for examination] 12.10.1998

[Date of sending the examiner's decision of rejection] 24.10.2000

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

\* NOTICES \*

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

CLAIMS

---

[Claim(s)]

[Claim 1] In the printing recording device printed in a form after developing the printed information which was equipped with the printing control section 2 and the print station section 12, and was directed from high order equipment 15 with a dot image on memory 24 The external storage 16 which external connection is made and memorizes said image data, and an output selection means 18 to choose the output to the print station section 12 of said image data, or the output to said external storage 16, A retrieval code addition means 19 to add retrieval code in case the output to said external storage 16 is chosen and written in with this output selection means 18, The printing recording device characterized by establishing the retrieval means 20 which searches and reads the image data stored in said external storage based on the retrieval directions from high order equipment 15.

[Claim 2] The printing recording apparatus characterized by transmitting the image data read with said retrieval means 20 to high order equipment 15 in a printing recording apparatus according to claim 1.

[Claim 3] The printing recording apparatus characterized by establishing a compression means 21 to compress the image data which restores the compressed data read while compressing the image data written in said external storage 16 in the printing recording apparatus according to claim 1 to the image data of a basis, and is further transmitted to a high order at equipment.

---

[Translation done.]

\* NOTICES \*

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

---

DETAILED DESCRIPTION

---

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the printing recording device which memorizes the print data developed with the dot image to a disk unit etc., and enabled it to reuse them. If it is in airline printers, such as a page printer, after developing with a dot image from the printed information given from high order equipments, such as a host computer, using the storing information on Font ROM, it is made to carry out direct printing record in the printer device section at a form.

[0002] However, the data [ finishing / printing ] developed by the dot image are eliminated conventionally, without keeping it, and to keep the print data developed by the dot image and to suppose that it is available is desired from the standpoint of an informational deployment.

[0003]

[Description of the Prior Art] Drawing 6 is the explanatory view shown taking the case of the low-speed page printer as a conventional printing recording apparatus. In drawing 6 , CPU2, a program ROM 3, a font ROM 4, the high order interface 5, the code buffer RAM 6, RAM7 for alphabetic character expansion, RAM8 for graphic form expansion, RAM9 for image expansion, RAM10 for overlay expansion, the video interface 11, printer engine 12, and the operation panel 13 resemble the low-speed page printer 1 in an internal bus 14, and it connects mutually more, and is prepared.

[0004] Printing processing stores in the code buffer RAM 6 which was obtained in connection with the printing command and which functions considering a character code as a middle buffer, for example, if CPU2 receives a printing command through the high order interface 5 from high order equipment 15. Then, it develops with a dot image by developing the font information on the font ROM 4 specified by the character code by performing the expansion program stored in the program ROM 3 by CPU2 to profile information on RAM7 for alphabetic character expansion, if it is read-out, for example, an outline font, and after and the inside of a profile being fill uped with a dot pattern.

[0005] In addition, RAM7 for alphabetic character expansion, RAM8 for graphic form expansion, RAM9 for image expansion, and RAM10 for overlay expansion are functioning as a frame buffer. Moreover, dot images, such as a ruled line pattern of a document and half tone dot meshing, are developed by overlay RAM 10. If the expansion to a dot image ends, through the video interface 11, the image data of RAM7 for alphabetic character expansion will be supplied to the print engine 12, and will perform printing record to a form by a laser print engine etc.

[0006] Furthermore, the operation panel 13 can perform various kinds of actuation, such as powering on of the low-speed page printer 1, and starting.

[0007]

[Problem(s) to be Solved by the Invention] by the way, if it is in such a conventional printing recording device, and develop with the dot image which can see printed information, such as a character code which was offered from high order equipment, and which cannot be seen as printed information if it remains as it is, by the eye, you are trying to print directly in a form and printing ends, especially an image data will be eliminated [ \*\*\*\* ] for the next printing, without being kept .

[0008] However, although it was not carried out, for example, did not need to record on a form immediately by the approach except storage of the image data which can be checked by the eye recording on a form directly, also when it seemed that he wanted to collect behind and to see an image data, there was a problem that there was no storage approach of the image data except carrying out printing record in a form, and the developed image data could not fully be utilized.

[0009] This invention was made in view of such a conventional trouble, and aims at offering the printing recording device which enabled it to utilize effectively the image data developed by the form which can be seen by the eye in the case of printing record.

[0010]

[Means for Solving the Problem] Drawing 1 is the principle explanatory view of this invention. First, this invention is equipped with the printing control section 2 and the print station section 12, and after it develops the printed information directed from high order equipment 15 with a dot image on memory 24, it is aimed at the printing recording device printed in a form.

[0011] If it is in this invention per such a printing recording device The external storage 16 which external connection is made and memorizes an image data, such as a magnetic disk drive and an optical disk unit, An output selection means 18 to choose the output to the print station section 12 of an image data, or the output to external storage 16, A retrieval code addition means 19 to add retrieval code in case the output to external storage 16 is chosen and written in with the output selection means 18, It is characterized by establishing the retrieval means 20 which searches and reads the image data stored in external storage 16 based on the retrieval directions from high order equipment 15.

[0012] Moreover, this invention is characterized by transmitting the image data read with the retrieval means 20 to high order equipment 15. Furthermore, this invention restores the compressed data read while compressing the image data written in external storage 16 to the image data of a basis, and is characterized by establishing a compression means 21 to compress the image data further transmitted to a high order at equipment.

[0013]

[Function] Since according to the printing recording apparatus of this invention equipped with such a configuration the code data for retrieval are added to the data developed by the dot image from printed information, such as code data, and it can store in a disk unit etc., when the output to a form is not required, even if it does not carry out printing record, an image data can be kept in a form, and it can utilize as print data which can be seen by the eye.

[0014] What is necessary is to read from DIKUSU equipment and just to transmit to see by CRT etc. as an image data by the high order equipment side as a use gestalt of the image data which carried out record storage that what is necessary is just to read from a disk unit, when the record output to a form is needed. For example, the continuation printed information in which continuous form carries out printing record is developed with a continuation dot image, and it memorizes to a disk unit, and it reads at a time 1 page of images stored in DIKUSU equipment after that, and use of a broad image data it is told to cut sheets, such as a document, that carries out printing record is attained.

[0015]

[Example] Drawing 2 is the example block diagram having shown one example of the printing recording device of this invention taking the case of the low-speed page printer. In drawing 2, 1 is a low-speed page printer and has connected the printer engine 12 and also the operation panel 13 as CPU2, a program ROM 3, a font ROM 4, the high order interface 5, the code buffer RAM 6, a frame buffer RAM 24, the video interface 11, and the printing mechanism section mutually through an internal bus 14.

[0016] Here, the frame buffer RAM 24 is divided into the alphabetic character expansion field 7, the graphic form expansion field 8, the image expansion field 9, and the overlay expansion field 10. Of course, it is good also as RAM which became independent about each field as shown in drawing 6 R> 6. If it is in this invention in addition to the configuration of the same low-speed page printer 1 as such the former, external storage 16 is connected through the external instrument connection interface 22. As external storage 16, proper storage, such as a magnetic disk drive, an optical disk unit, optical-magnetic disc equipment, and a magnetic tape unit, can be used.

[0017] Printing processing of the low-speed page printer 1 and record processing to external storage 16 are realized by performing the program stored in the program RAM 3 by CPU2. If it is in this example, the expansion program 17, the output selection program 18 which functions as an output selection means, the retrieval code addition program 19 which functions as a retrieval code addition means, the retrieval program 20 which functions as a retrieval means, and the compression program 21 which functions as a compression means further are stored in the program RAM 3.

[0018] The conventional low-speed page printer is also equipped with the expansion program 17, and it develops the image data which comes in a dot image on the field where a frame buffer RAM 24 corresponds using a font ROM 4 based on the code data as printing information directed in connection with the printing command from high order equipment 15. The expansion program 17 performs expansion processing to a dot image for the printed information which the code data as printed information sent in connection with a printing command here from high order equipment 15 were once stored in the code buffer RAM 6 which functions as a middle buffer, and was stored in the code buffer RAM 6.

[0019] Selection processing of whether the output selection program 18 stores in external storage 16 the image data developed by the proper field of a frame buffer RAM 24 through whether through the video interface 11, it outputs to printer engine 12 and printing record is carried out and the external instrument connection interface 22 is performed. You may make it this selection processing choose an output destination change with the actuation switch of the operation panel 13 prepared in the low-speed page printer 1, and it is good also as selection processing based on the select command from high order equipment 15.

[0020] The retrieval code addition program 19 adds the retrieval code used for the retrieval after storage, when the output to the external storage 16 of an image data is chosen by the output selection program 18. Although the ten key switch of the operation panel 13 etc. may perform addition of the retrieval code by the retrieval code addition program 19, since a setup of detailed retrieval code is enabled, a setup of the retrieval code which used the keyboard of high order equipment 15, and a mouse and a CRT display is enabled.

[0021] When the retrieval program 20 receives a find command from high order equipment 15, it performs retrieval processing which reads the image data of the external storage 16 specified by the find command. Moreover, from high order equipment 15, the command which shows the output destination change of the searched image data is directed to retrieval processing and coincidence, and this output destination change command serves as either of the transfers to the printing mechanism section or the high order equipment 15 which becomes with printer engine 12.

[0022] Of course, the image data from the external storage 16 read to the retrieval program 20 performs the transfer to the high order equipment 15 which went via the printing record by the output to printer engine 12, or the high order interface 5, after being developed by the field to which a frame buffer RAM corresponds. Furthermore, a compression program 21 is used, in case the image data stored in the frame buffer RAM on the occasion of the output selection to external storage 16 is compressed and it writes in external storage 16. Moreover, when the image data is memorized in the form of compressed data to external storage 16, an image data is developed to the field to which restoration processing which returns the compressed data searched by the retrieval program 20 to the original image data is performed, and a frame buffer RAM corresponds. As this compression program 21, the proper coding compression method and restoration method using the universal sign for monochrome binary image etc. are employable, for example.

[0023] Furthermore, after changing into compressed data the raw image data transmitted by starting of a compression program 21 in order to reduce the amount of data transfer to high order equipment 15 when it is the raw image data into which the image data which was searched from external storage 16 and developed by the field of a frame buffer RAM 24 is not compressed, it transmits to high order equipment 15, and you may make it restore the original image data.

[0024] Drawing 3 is the flow chart which showed the printing processing in the example of drawing 2. In drawing 3, CPU2 which functions as a printing control section of the low-speed page printer 1 first is

supervising the existence of the reception of a printing command performed from high order equipment 15 via the high order interface 5 at step S1, if reception of a printing command is distinguished, it will progress to step S2, and it stores in the code buffer RAM 6 as a middle buffer the code data as printed information sent in connection with a printing command.

[0025] After a transfer of print data, such as code data from the high order equipment 15 to the code buffer RAM 6, is completed, it progresses to step S3, and the expansion program 17 is started, and expansion with a dot image is performed. For example, when the code data directed from high order equipment 15 are a character code, the font data of a font RAM 4 is read according to a character code, and it processes so that the inside of the border line which developed border-line data from font data, and was developed on the alphabetic character expansion field 7 of a frame buffer RAM 24 based on this font data may be filled up with a dot, and develops with a dot image.

[0026] Then, it confirms whether to be an output to the disk as external storage 16 by step S4. Here, if it is an output to printer engine 12, it will progress to step S9, and printing actuation which followed the image data developed to the specific region of a frame buffer RAM 24 at the xerography according to delivery, for example, a laser beam printer device, to printer engine 12 through the video interface 11 is performed.

[0027] On the other hand, when the disk output as external storage 16 is chosen by step S4, the retrieval code addition program 19 is started at step S5, and proper retrieval code is added. Then, it distinguishes whether the image data memorized as a disk output at step S6 is compressed, if compression directions are received from high order equipment 15, processing which compresses an image data at step S7 will be performed, if it is not compression processing, step S7 will not be processed, but it progresses to step S8, respectively, and compressed data or a raw image data is recorded on the disk unit as external storage 16.

[0028] Drawing 4 is the flow chart which showed the retrieval processing for searching the image data kept by external storage 16, and performing transfer to high order equipment, or printing actuation. In addition, if it is in this flow chart, about the transfer data to high order equipment, the case where compression processing is surely performed and transmitted is taken for the example. In drawing 4, if receipt of the find command from high order equipment 15 is first distinguished at step S1, it will progress to step S2, and the retrieval code directed in connection with the find command is stored in the code buffer RAM 6 which functions as a middle buffer.

[0029] Then, it develops to the field of classification to which the retrieval program 20 starts based on the retrieval code stored in the code buffer RAM 6 as a middle buffer, the image data which has started and searched access of the disk unit as external storage 16 is read, and a frame buffer RAM 24 corresponds. Then, the existence of the transfer to high order equipment is checked by step S4, if it is not the transfer to high order equipment, since it is printing record, it progresses to step S5, and disk read-out data confirm whether to be compressed data. If it is compressed data, restoration processing which starts a compression program 21 at step S6, and is returned to the original image data will be performed.

[0030] When restoration processing of step S6 ends, or when read-out data are not compressed data, the read-out data developed to the frame buffer RAM 24 at step S7 are supplied to printer engine 12 through the video interface 11, and print actuation to a form is performed. On the other hand, when the transfer to high order equipment is distinguished by step S4, disk read-out data confirm whether to be compressed data at step S8, if it is raw data, a compression program 21 will be started by step S9, and compression processing of universal coding etc. will be performed.

[0031] If compression processing of step S9 ends, or when disk read-out data are compressed data, transfer processing which transmits the compressed data progressed and read to step S10 to high order equipment 15 through the high order interface 5 will be performed. In addition, although the case where the transfer data to high order equipment were surely used as compressed data was taken for the example if it was in retrieval processing of drawing 4, of course, you may make it transmit to high order equipment as raw data.

[0032] Drawing 5 is the example block diagram having shown other examples of this invention taking

the case of the high-speed page printer 30. If it is in the high-speed page printer 30 of drawing 5, the interior is independently equipped with CPU2b CPU20a for reception edit, and for drawing control. A program RAM 3, the operation panel 13, the high order interface 5, and the code buffer 6 are mutually connected to CPU2a for reception edit through internal bus 14a.

[0033] Moreover, printer engine 12 is mutually connected to CPU2b for drawing control by internal bus 16b through a frame buffer RAM 24 and the video interface 11 through a font ROM 4 and the bit map control section 25. About such a high-speed page printer 30, the expansion program 17, the output selection program 18, the retrieval code addition program 19, the retrieval program 20, and the compression program 21 are similarly stored in the program RAM 3 with having been shown in drawing 2 like the example of drawing 2.

[0034] Each of the expansion program 17, the output selection program 18, the retrieval code addition program 19, the retrieval program 20, and a compression program 21 is fundamentally performed by the CPU2b side for drawing control among the processing facilities by the program stored in such a program RAM 3. If it is in the CPU2a side for reception edit, reception edit processing of the data transfer to various kinds of command reception from high order equipment 15 and high order equipment 15 etc. serves as the main work.

[0035] Therefore, external storage 16 is connected through the external instrument connection interface 22 linked to internal bus 14b of CPU2b for drawing control. Furthermore, the bit map control section 25 which develops a dot image by a firmware etc. to the frame buffer RAM 24 of CPU2b for drawing control at high speed is formed.

[0036] Furthermore, in order to transmit the image data read from external storage 16 by retrieval program execution to high order equipment 15, the internal bus interface 26 which connects internal buses 14b and 14a is established, and it enables it to transmit at high speed the image data which it was read to the frame buffer RAM24 grade via the internal bus interface 26, and was developed to high order equipment 15 through the high order interface 5.

[0037] It is the same in output processing and retrieval processing in the example of this drawing 5 having been fundamentally shown in the flow chart of drawing 3 and drawing 4, and since the contents of each processing can distribute to CPU2a for reception edit, and CPU2b for drawing control and can carry out in juxtaposition, only that part can realize high-speed processing.

[0038]

[Effect of the Invention] Since according to this invention retrieval code is added and the image data developed with the dot image for printing record in a form can be memorized to external storage, such as a disk unit, if needed, as explained above, In a form, even if it does not carry out direct printing record, the image data for printing can be saved as information, and when required, the activity of beginning to read an image data directly, and printing it, or transmitting and reusing it to high order equipment can be aimed at.

---

[Translation done.]



\* NOTICES \*

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

DESCRIPTION OF DRAWINGS

---

[Brief Description of the Drawings]

[Drawing 1] The principle explanatory view of this invention

[Drawing 2] The example block diagram of this invention which took the low-speed page printer for the example

[Drawing 3] The flow chart which showed record processing of drawing 2

[Drawing 4] The flow chart which showed retrieval processing of drawing 2

[Drawing 5] The example block diagram of this invention using a high-speed page printer

[Drawing 6] The explanatory view of the conventional low-speed page printer

[Description of Notations]

1: Low-speed page printer

2: CPU (printing control section)

3: Program RAM

4: Font ROM

5: High order interface

6: Code buffer RAM

7: Alphabetic character expansion field (RAM for alphabetic character expansion)

8: Graphic form expansion field (RAM for graphic form expansion)

9: Image expansion field (RAM for image expansion)

10: Overlay expansion field (RAM for overlay expansion)

11: Video interface

12: Printer engine

13: Operation panel

14, 14a, 14b: Internal bus

15: High order equipment

16: External storage

17: Expansion program

18: Output selection program (output selection means)

19: Retrieval code addition program (retrieval code addition means)

20: Retrieval program (retrieval means)

21: Compression program (compression means)

22: External instrument connection interface

24: Frame buffer RAM

25: Bit map control section

26: Internal bus interface

30: A high-speed page printer

---

[Translation done.]